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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/072,364

Applicant(s)

SADOT, EMEK

Examiner

Charles E. Anya

Art Unit

2194

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3/MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/11/08.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. Claims 1-54 are pending in this application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-4, 6, 7, 13-17, 24-33, 35-37, 41, 42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 7,047,301 B2 issued to Skene et al. in view of U.S. Pat. No. 6,182,139 B1 issued to Brendel.**
3. As to claim 1, Skene teaches a method of selecting a server to represent a virtual server hosted by a plurality of servers, comprising:
- providing, by a load balancer not associated with the virtual server, values for one or more parameters, of two or more paths, each path defined between a point in a vicinity of a client accessing the virtual server and one of the plurality of servers representing the virtual server (EDNS Server 160 "...round trip time...hops..." Col. 5 Ln. 18 – 28); and
- selecting a server to provide data for the client, responsive to the values of the one or more parameters ("...EDNS server determines which virtual servers..." Col. 2 Ln.

30 – 38, Block 710 Col. 11 Ln. 50 – 67, Col. 12 Ln. 1 – 13, Block 930 Col. 13 Ln. 45 – 50).

Skene is silent with reference to the load balancer comprises a client-controlled load balancer that directly selects said one of the plurality of servers representing the virtual server.

Brendel teaches the load balancer comprises a client-controlled load balancer that directly selects said one of the plurality of servers representing the virtual server (“...load-balancer module in the client machine...make a server assignment...” Col. 4 Ln. 62 – 67, Col. 5 Ln. 1 – 35, **“Thus load-balancing functions are shifted the client machine using client-side dispatcher 20...”** Col. 6 Ln. 30 – 31).

It would have been obvious to one of ordinary skill in the art the time the invention was made to modify the system of Skene with the teaching of Brendel because the teaching of Brendel would improve the system of Skene by providing a high-availability system that allows a crash of a server farm’s load-balancer to not affect existing connections (Brendel Col. 14 Ln. 35 – 43).

4. As to claim 2, Brendel teaches a method according to claim 1, wherein the load balancer and the client are in the same metropolitan area (Col. 5 Ln. 1 – 19).

5. As to claim 3, Brendel teaches a method according to claim 1, wherein the client-controlled load balancer resides between the client and the virtual server (figures 3/5).

6. As to claim 4, Skene teaches a method according to claim 1, wherein the one or more parameters comprise at least one of a jitter, a round trip delay or a hop count "...round trip time...hops..." Col. 5 Ln. 18 – 28).

7. As to claim 5, Skene teaches a method according to claim 1, wherein the one or more parameters comprise a cost ("...loading balancing metrics..." Col. 5 Ln. 18 – 43).

8. As to claim 6, Brendel teaches a method according to claim 1, wherein selecting the server comprises selecting, by a client-controlled load balancer, responsive to receiving identification of a virtual server requested by the client ("...URL..." Col. 5 Ln. 1 – 35).

9. As to claim 7, Brendel teaches a method according to claim 6, wherein selecting the server comprises selecting, by a client-controlled load balancer, responsive to receiving a connection establishment request from the client ("...connection..." Col. 5 Ln. 1 – 35).

10. As to claim 13, Skene teaches a method according to claim 1, further comprising transmitting an IP address of the selected server to the client ("...IP address... to the client..." Col. 12 Ln. 1 – 6).

11. As to claim 14, Skene teaches a method according to claim 13, wherein transmitting the IP address of the selected server to the client comprises transmitting a DNS response (“...IP address... to the client...” Col. 12 Ln. 1 – 6).

12. As to claim 15, Skene teaches a method according to claim 1, wherein ones of the plurality of servers are located in different geographical regions (figure 1 Col. 4 Ln. 25 – 32, Col. 8 Ln. 57 – 67).

13. As to claim 16, Skene teaches a method according to claim 1, wherein selecting a server to provide data for the client comprises selecting, by the load balancer, a second load balancer which is to perform the server selection and selecting, by the second load balancer, a server to provide data for the client (Virtual ENDS Server 160/SACs 1/101 Col. 12 Ln. 1 – 14).

14. As to claim 17, Skene teaches a method according to claim 1, wherein the virtual server hosts a web site (“...web site...” Col. 4 Ln. 14 – 18).

15. As to claim 24, Skene teaches a method of selecting a server to be accessed, comprising:

receiving, by a load balancer, a message relating to a virtual server, hosted by a plurality of servers (“LDNS server requests...” Col. 2 Ln. 30 – 39, figure 7 Col. 11 Ln. 50

– 67, Col. 12 Ln. 1 – 14), and to a client desiring to receive data from the virtual server (“...client’s request...” Col. 11 Ln. 57 – 67); and

selecting, by the load balancer, one of the plurality of servers to provide data to the server (“...EDNS server determines...” Col. 2 Ln. 30 – 39, Block 710 Col. 11 Ln. 57 – 67, Col. 13 Ln. 45 – 50, Col. 14 Ln. 39 – 42).

Skene is silent with reference to the load balancer being closer to the client than to the selected server, and wherein the load balancer comprises a client-controlled load balancer that directly selects said one of the plurality of servers representing the virtual server.

Brendel teaches the load balancer being closer to the client than to the selected server, and wherein the load balancer comprises a client-controlled load balancer that directly selects said one of the plurality of servers representing the virtual server (“...load-balancer module in the client machine...make a server assignment...” Col. 4 Ln. 62 – 67, Col. 5 Ln. 1 – 35, **“Thus load-balancing functions are shifted the client machine using client-side dispatcher 20...”** Col. 6 Ln. 30 – 31).

It would have been obvious to one of ordinary skill in the art the time the invention was made to modify the system of Skene with the teaching of Brendel because the teaching of Brendel would improve the system of Skene by providing a high-availability system that allows a crash of a server farm’s load-balancer to not affect existing connections (Brendel Col. 14 Ln. 35 – 43).

16. As to claim 25, Brendel teaches a method according to claim 24, wherein the load balancer is closer to the client than to any of the plurality of servers hosting the virtual server ("...load-balancer module in the client machine...make a server assignment..." Col. 4 Ln. 62 – 67, Col. 5 Ln. 1 – 35).

17. As to claims 26 and 27, see the rejection of claims 2 and 3 respectively.

18. As to claim 28, Brendel teaches a method according to claim 24, wherein the load balancer is not associated with the virtual server (Client Dispatcher 20).

19. As to claim 29, Brendel teaches a method according to claim 24, wherein the load balancer is under control of a system manager of the client ("...load-balancer module in the client machine...make a server assignment..." Col. 4 Ln. 62 – 67, Col. 5 Ln. 1 – 35).

20. As to claim 30, Skene teaches a method according to claim 24, wherein receiving the message comprises receiving a DNS query message ("LDNS server requests..." Col. 2 Ln. 30 – 38).

21. As to claim 31, Skene teaches a method according to claim 24, wherein receiving the message comprises receiving from a DNS server ("LDNS server requests..." Col. 2 Ln. 30 – 38).

22. As to claim 32, Brendel teaches a method according to claim 24, wherein receiving the message comprises receiving a connection establishment request directed to the virtual server ("...connection..." Col. 5 Ln. 1 – 35).

23. As to claim 33, Skene teaches a method according to claim 24, wherein receiving the message comprises receiving a message directed to the load balancer ("LDNS server requests..." Col. 2 Ln. 30 – 38).

24. As to claim 35, Skene teaches a method according to claim 24, wherein selecting one of the servers comprises selecting a server which has a lowest delay path or a highest packet size path to the load balancer ("...packet rate..." Col. 5 Ln. 18 – 43).

25. As to claim 36, Brendel teaches a method according to claim 24, wherein the load balancer is geographically closer to the client than to the selected server ("...load-balancer module in the client machine...make a server assignment..." Col. 4 Ln. 62 – 67, Col. 5 Ln. 1 – 35).

26. As to claim 37, Skene teaches a method of selecting a server to be accessed, comprising:

receiving, by a load balancer, a message relating to a virtual server, hosted by a plurality of servers ("LDNS server requests..." Col. 2 Ln. 30 – 39, figure 7 Col. 11 Ln. 50

– 67, Col. 12 Ln. 1 – 14), and to a client desiring to receive data from the virtual server (“...client’s request...” Col. 11 Ln. 57 – 67); and

selecting, by the load balancer, one of the plurality of servers to provide data to the client, at least partially responsive to the cost of communications between the client and one or more of the plurality of servers (“...loading balancing metrics...” Col. 5 Ln. 18 – 28).

Skene is silent with reference to the load balancer as comprising a client-controlled load balancer that directly selects said one of the plurality of servers representing the virtual server.

Brendel teaches the load balancer as comprising a client-controlled load balancer that directly selects said one of the plurality of servers representing the virtual server (“...load-balancer module in the client machine...make a server assignment...” Col. 4 Ln. 62 – 67, Col. 5 Ln. 1 – 35, **“Thus load-balancing functions are shifted the client machine using client-side dispatcher 20...”** Col. 6 Ln. 30 – 31).

It would have been obvious to one of ordinary skill in the art the time the invention was made to modify the system of Skene with the teaching of Brendel because the teaching of Brendel would improve the system of Skene by providing a high-availability system that allows a crash of a server farm's load-balancer to not affect existing connections (Brendel Col. 14 Ln. 35 – 43).

27. As to claim 41, Skene teaches a load balancer, comprising:

an interface adapted to receive server access messages from clients ("LDNS server requests..." Col. 2 Ln. 30 – 39, figure 7 Col. 11 Ln. 50 – 67, Col. 12 Ln. 1 – 14); and a processor adapted to determine, for at least one of the messages, whether the message requires load balancing responsive to at least one attribute different from the identity of the server referenced by the message ("EDNS server determines..." Col. 2 Ln. 30 – 38, EDNS Server 160 Col. 5 Ln. 18 – 43), and to select for at least one message determined to require load balancing, a server to service the client ("EDNS server determines..." Col. 2 Ln. 30 – 38, Block 710 Col. 11 Ln. 57 – 67, Col. 12 Ln. 1 – 14).

Skene is silent with reference to the processor comprising a client-controlled processor that directly selects the server to service the client based on the at least one attribute.

Brendel teaches the processor comprising a client-controlled processor that directly selects the server to service the client based on the at least one attribute ("...load-balancer module in the client machine...URL...make a server assignment..." Col. 4 Ln. 62 – 67, Col. 5 Ln. 1 – 35, **"Thus load-balancing functions are shifted the client machine using client-side dispatcher 20..."** Col. 6 Ln. 30 – 31).

It would have been obvious to one of ordinary skill in the art the time the invention was made to modify the system of Skene with the teaching of Brendel because the teaching of Brendel would improve the system of Skene by providing a high-availability system that allows a crash of a server farm's load-balancer to not affect existing connections (Brendel Col. 14 Ln. 35 – 43).

28. As to claim 42, Skene teaches a load balancer according to claim 41, wherein the at least one attribute comprises the time at which the message is received at the interface ("...round trip time..." Col. 5 Ln. 18 – 28).

29. As to claim 44, Skene teaches a load balancer according to claim 41, wherein the at least one attribute comprises a protocol to govern the communication with the server ("...load balancing metrics..." Col. 5 Ln. 18 – 35).

30. Claims 8-10, 18-23, 34, 38-40, 43 and 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pub. No. 2001/0047415 A1 issued to Skene et al. in view of U.S. Pat. No. 6,182,139 B1 issued to Brendel as applied to claim 6 above, and further in view of U.S. Pat. No. 6,249,801 B1 issued to Zisapel et al.

31. As to claim 8, Brendel and Skene are silent with reference to a method according to claim 6, wherein providing the values for the one or more parameters comprise measuring at least one of the parameters.

Zisapel teaches a method according to claim 6, wherein providing the values for the one or more parameters comprises measuring at least one of the parameters (Col. 6 Ln. 50 - 55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Brendel and Skene with the teaching of

Zisapel because the teaching of Zisapel would improve the system of Brendel and Skene by providing access to the closest or best suited server to service a client request (Zisapel Col. 6 Ln. 50 - 55).

32. As to claim 9, Zisapel teaches a method according to claim 8, wherein measuring at least one of the parameters, for at least one of the paths, is performed before receiving the connection establishment request (Proximity Table 54 Col. 6 Ln. 35 - 39).

33. As to claim 10, Zisapel teaches a method according to claim 8, wherein measuring at least one of the parameters for at least one of the paths is performed after receiving the connection establishment request (Col. 6 Ln. 50 - 55).

34. As to claim 18, Zisapel teaches a method according to claim 1, wherein selecting a server to provide data for the client comprises selecting a server which minimizes a function of the one or more parameters ("...weighting..." Col. 7 Ln. 17 - 34).

35. As to claim 19, Zisapel teaches a method according to claim 18, wherein selecting a server to provide data comprises choosing a function of the one or more parameters to be minimized and selecting a server which minimizes the chosen function (Col. 7 Ln. 17 - 42).

36. As to claim 20, Skene teaches method according to claim 19, wherein the function is chosen responsive to a protocol with which the virtual server is accessed (“...load balancing metrics...” Col. 5 Ln. 18 – 43).

37. As to claim 21, Skene teaches method according to claim 19, wherein the function is chosen responsive to the virtual server accessed (“...load balancing metrics...” Col. 5 Ln. 18 – 43).

38. As to claim 22, Zisapel teaches a method according to claim 19, wherein the function is chosen responsive to all attribute of the client (Col. 7 Ln. 17 - 34).

39. As to claim 23, Skene teaches a method according to claim 19, wherein the function is chosen responsive to the time of the selection (“...load balancing metrics...” Col. 5 Ln. 18 – 43).

40. As to claim 34, Zisapel teaches a method according to claim 24, wherein selecting one of the servers comprises selecting a server which has a lowest cost path to the load balancer (“...lowest total weighted...” Col. 7 Ln. 17 - 34).

41. As to claim 38, Zisapel teaches a method according to claim 37, wherein selecting one of the servers comprises selecting a server under a constraint that a

lowest cost client communication connection is used in connecting to the server (“...lowest total weighted...” Col. 7 Ln. 1 7 - 34).

42. As to claim 39, Zisapel teaches a method according to claim 37, wherein selecting one of the sewers comprises selecting a server which minimizes a weighted sum of communication costs to the server and at least one other route related parameter (“...hop...TTL...” “...weighting...” Col. 7 Ln. 6 – 34).

43. As to claim 40, Zisapel teaches a method according to claim 39, wherein selecting one of the sewers comprises selecting a server which minimizes a weighted sum of the communication costs to the server and the round trip delay to the server (“...latency...” “...weighting...” Col. 7 Ln. 6 - 34).

44. As to claim 43, Zisapel teaches a load balancer according to claim 41, wherein the at least one attribute comprises the identity of the client (Request 28 Col. 5 Ln. 32 – 38).

45. As to claim 47, Skene teaches a method of selecting a server to be accessed, comprising:

receiving, by a load balancer, a message relating to a virtual server, hosted by a plurality of servers, and to a client desiring to receive data from the virtual server

("LDNS server requests..." Col. 2 Ln. 30 – 39, figure 7 Col. 11 Ln. 50 – 67, Col. 12 Ln. 1 – 14); and

choosing a function from a plurality of predetermined functions utilized by the load balancer for selecting servers, responsive to the received message ("...load balancing metrics..." Col. 5 Ln. 18 – 43, Block 930 Col. 13 Ln. 45 – 50).

Skene is silent with reference to selecting, by the load balancer, one of the plurality of servers that minimizes or maximizes the chosen function, to provide data to the client and a load balancer comprising a client-controlled load balancer that directly selects said one of the plurality of servers representing the virtual server that minimizes or maximizes the chosen function.

Brendel teaches a load balancer comprising a client-controlled load balancer that directly selects said one of the plurality of servers representing the virtual server that minimizes or maximizes the chosen function ("Minimizing latency..." Col. 3 Ln. 1 – 17, "...load-balancer module in the client machine...make a server assignment..." Col. 4 Ln. 62 – 67, Col. 5 Ln. 1 – 35, **"Thus load-balancing functions are shifted the client machine using client-side dispatcher 20..."** Col. 6 Ln. 30 – 31).

It would have been obvious to one of ordinary skill in the art the time the invention was made to modify the system of Skene with the teaching of Brendel because the teaching of Brendel would improve the system of Skene by providing a high-availability system that allows a crash of a server farm's load-balancer to not affect existing connections (Brendel Col. 14 Ln. 35 – 43).

Zisapel teaches selecting, by the load balancer, one of the plurality of servers that minimizes or maximizes the chosen function, to provide data to the client (“...weighting...” Col. 7 Ln. 17 - 34).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Brendel and Skene with the teaching of Zisapel because the teaching of Zisapel would improve the system of Brendel and Skene by providing access to the closest or best suited server to service a client request (Zisapel Col. 6 Ln. 50 - 55).

46. As to claim 48, Zisapel teaches a method according to claim 47, wherein choosing the function comprises choosing responsive to an identity of the client (Request 28 Col. 5 Ln. 32 –38).

47. As to claim 49, Skene teaches method according to claim 47, wherein choosing the function comprises choosing responsive to a time at which the message is received (“...round trip time...” Col. 5 Ln. 18 – 28).

48. As to claim 50, Skene teaches a method according to claim 47, wherein at least two of the predetermined functions depend on different groups of one or more parameters (“...load balancing metrics...” Col. 5 Ln. 18 – 43).

49. As to claim 51, Zisapel teaches a method according to claim 47, wherein at least two of the predetermined functions depend on the same parameters but give different weight to one or more of the parameters on which they depend (Col. 7 Ln. 17 – 34).

50. Claims 11, 12, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 7,047,301 B2 issued to Skene et al. in view of U.S. Pat. No. 6,182,139 B1 issued to Brendel as applied to claims 1 or 41 above, and further in view of U.S. Pat. No. 6,389,462 issued to Cohen et al.

51. As to claim 11, Brendel and Skene are silent with reference to a method according to claim 1, further comprising changing the destination IP address of packets received by the load balancer from the client, to an IP address of the selected server.

Cohen teaches a method according to claim 1, further comprising changing the destination IP address of packets received by the load balancer from the client, to an IP address of the selected server (“...proxy redirector...modified...” Col. 5 Ln. 12 – 36, “...translation...” Col. 8 Ln. 21 – 32).

It would have been obvious to one of ordinary skill in the art the time the invention was made to modify the system of Brendel and Skene with the teaching of Cohen because the teaching of Cohen would improve the system of Brendel and Skene by allowing a client to transparently establish a TCP connection with proxy cache (Cohen Col. 7 Ln. 12 – 17).

52. As to claim 12, Cohen teaches a method according to claim 1, further comprising changing the source IP address of packets received by the load balancer from the selected server (“...translates...” Col. 8 Ln. 35 – 52).

53. As to claim 45, Cohen teaches a load balancer according to claim 41, further comprising a packet changing unit adapted to change the contents of at least one field of packets belonging to connections for which load balancing was performed (“...proxy redirector...modified...” Col. 5 Ln. 12 – 36, “...translation...” Col. 8 Ln. 21 – 32).

54. As to claim 46, Cohen teaches a load balancer according to claim 45, wherein the packet changing unit is adapted to change packets in accordance with half NAT or full NAT procedures (Col. 8 Ln. 53 – 58, Col. 14 Ln. 21 – 45, Col. 15 Ln. 9 – 37).

55. Claims 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,182,139 B1 issued to Brendel in view of U.S. Pat. No. 6,185,601 B1 to issued to Wolff.

56. As to claim 52, Brendel teaches a method of selecting a server to be accessed by a client from among a plurality of servers associated with a domain name comprising:

providing a client-controlled load balancer (“...client-side dispatcher...” Col. 3 Ln. 20 – 30, “...load-balancer...” Col. 5 Ln. 1 – 20, Ln. 53 – 56, **“Thus load-balancing**

functions are shifted the client machine using client-side dispatcher 20..." Col. 6 Ln. 30 – 31);

receiving at the load balancer a list of addresses of servers hosting the domain name (Session Table 32 Col. 6 Ln. 34 – 39, "...a list of server...configuration file..." Col. 13 Ln. 36 – 67, Col. 14 Ln. 10 – 34); and

selecting by the load balancer one of the addresses of the plurality of servers based on a parameter related to a path between a point in the vicinity of the client and one of the plurality of servers ("...URL..." Col. 5 Ln. 1 – 20, "...uses it..." Col. 9 Ln. 63 – 67, Col. 10 Ln. 19 – 25).

Brendel is silent with reference to providing a load balancer in a local area network (LAN) connected to a wide area network (WAN), the LAN including the client.

Wolff teaches a load balancer in a local area network (LAN) connected to a wide area network (WAN), the LAN including the client (figure 2B, figure 4C/D).

It would have been obvious to one of ordinary skill in the art the time the invention was made to modify the system of Brendel with the teaching of Wolff because the teaching of Wolff would improve the system of Brendel by allowing for networking capabilities to a group of computers in close proximity to each other such as in an office building, a school, or a home and building of a network on a relatively inexpensive hardware such as Ethernet cables, network adapters, and hubs.

57. As to claim 53, Brendel teaches the method of claim 52 wherein the parameter is time-variable ("...fastest-responding server...round trip time or latency..." Col. 11 Ln. 1 – 18).

58. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,182,139 B1 issued to Brendel in view of U.S. Pat. No. 6,185,601 B1 to issued to Wolff as applied to claim 52 above, and further in view of U.S. Pub. No. 2001/0039585 A1 to Primak et al.

59. As to claim 54, Brendel and Wolff are silent with reference to the method of claim 52 wherein the parameter comprises a measure of communication quality.

Primak teaches the method of claim 52 wherein the parameter comprises a measure of communication quality ("...suitable client connection quality..." page 1 paragraph 0010, "...client connection quality..." page 2 paragraph 0011, page 3 claim 1).

It would have been obvious to one of ordinary skill in the art the time the invention was made to modify the system of Wolff and Brendel with the teaching of Primak because the teaching of Primak would improve the system of Wolff and Brendel by allowing for the process of load balancing connections between clients and servers in a distributed client/server system by taking in account the quality of the connections in order to minimize error rate (Primak page 1 paragraph 0006).

Response to Arguments

Applicant's arguments with respect to claims 52-54 have been considered but are moot in view of the new ground(s) of rejection. Also, in view of Applicant's argument the Menon prior art reference has been withdrawn as reference in this rejection.

Applicant's arguments filed 6/11/08 with reference to claims 1-51 have been fully considered but they are not persuasive.

Applicant argues in substance that (1) it is not clear how the client dispatcher (Client Dispatcher 20) of the Brendel prior art would operate in conjunction with the server (EDNS Server 160) of the Skene prior art, (2) the Brendel prior art does not teach a client-controlled load balancer, (3) the Skene and Brendel prior arts do not teach selecting a server based on one or more parameters related to a path including a point in the vicinity of the a client, (4) the Skene prior art does not teach selecting a server from a server cluster based on the cost of communications between a client and one of the server and (5) the no prior art of record discloses a client controlled load balancer that directly selects a server from a server pool based on something other than the identity of the requested server.

The Examiner respectfully traverses Applicants arguments:

As to point (1), the Skene prior art discloses a system and method for allowing extended servers to dynamically load balance requests from a local server. The Examiner acknowledges that the Skene prior art does not teach a load balancer executing or controlled by a client, hence the introduction of the Brendel prior art.

The Brendel prior art discloses a client-side load balancer (Client Dispatcher 20) that **resides in a client machine's network stack** for determining or assigning servers to a client's connections and requests. By allowing the load balancer to be resident on the client machine, a crashing of a server farm or cluster does not affect an existing connection (Brendel Col. 14 Ln. 35 – 43). A request from a client application via a URL is intercepted by the client-side load balancer (Client Dispatcher 20) and the Client Dispatcher 20 determines the best the remote server to handle the request. Client Dispatcher 20 converts the URL/destination address from the original server's address to an IP address of another server, the relocated server. The address is translated by looking up the original server's IP address and TCP port in the address translation table to find the IP address and TCP port of the relocated connection to the server process. The Client-side dispatcher 20 determines which remote server to select based on a number of factors including, fastest responding remote server (round trip time), the remote server with the lightest load, the remote server that has the highest performance rate or the closest remote server to the requesting client.

To conclude, the client (Client 40) including the client-side load balancer (Client Dispatcher 20) resident in a client machine and used in conjunction with the system of the Skene prior art allows for selection of one of the virtual servers (Virtual Servers 110/111/112). In essence the client (Client 40) of the Brendel prior art is one of the clients in the Skene prior art and functions to select a virtual server using the client dispatcher/client-side load balancer.

As to point (2), this argument is moot in view of the response in point (1).

As to point (3), the Skene prior art discloses a virtual server (EDNS server 160) configured to load balance client requests across the SACs according to a variety of load balancing metrics, including packet rate of each SAC, CPU utilization of the SAC, and number of connections serviced by the SAC. In addition, information about packets sent between servers in a server array and managed by the SAC and clients may be used for load balancing. Such information includes round trip time, packet loss, and hops. This information is the parameter or attribute for selecting or assigning a server. Also, the Brendel prior art discloses client side load balancer that intercepts requests and selects or assigns an appropriate server. In the Brendel prior art one of the criteria for selecting or assigning server is the Universal/Uniform Resource Locator (URL) attribute/parameter (Col. 5 Ln. 4 – 9).

As to claim (4), the Skene prior art discloses the process of selecting a server from a plurality of virtual servers based on a load balancing metrics. The load balancing metrics includes packet rate...number of connections...round trip time, packet loss, and hops. At least "round trip time" or "packet loss" is communication cost for sending a request to one of the plurality of servers. In selecting a server from the plurality of virtual servers the "round trip time" or "packet loss" is a **communication cost taken into consideration**.

As to point (5), as indicated earlier the loading balancing techniques in the Skene prior for selecting a server from a plurality of virtual servers is based on a load balancing metrics, which includes packet rate...number of connections...round trip time, packet

loss, and hops. These load balancing metrics do not identify the requested server/virtual server and as such negates Applicant's argument.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles E. Anya whose telephone number is 571-272-3757. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Thomson can be reached on 571-272-3718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/
Supervisory Patent Examiner, Art Unit 2195
cea.